REMARKS

Claims 1 and 3-22 are all the claims pending in the application. Claim 1 has been amended based on, for example, page 4, the Examples and the Table on page 9 of the specification.

Entry of the above amendments is respectfully requested.

I. Response to Rejection of Claims 1 and 3-12 under 35 U.S.C. §103(a)

Claims 1 and 3-12 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Nakaoka et al. (US 4,336,080) in view of Chatfield et al. (US 4,159,218).

Applicants respectfully traverse.

Claim 1 recites, inter alia, a Mn content of $0.300\% \leq Mn \leq 0.500\%$. It is submitted (1) that Nakaoka does not disclose the claimed range of Mn and (2) that one of ordinary skill in the art would not arrive at the claimed range.

The Examiner asserts that Nakaoka teaches a range of 0.05 to 3.0% and that Nakaoka teaches that higher Mn contents can be used when higher yield strengths and lower r values are desired. *See* pages 6-7 of the Office Action.

Applicants respectfully disagree. The Examiner relies on column 6, lines 26-27 of Nakaoka, which states:

> Fig. 1 is a graph illustrating the Lankford value (r) of steel sheets manufactured with various contents of manganese under the following conditions:
>
> Carbon content: 0.03 wt%
>
> Manganese content: several levels within the range of from 0.05 to 0.30 wt %.

Thus, one of ordinary skill in the art would understand that the above ranges reported are the ranges of compositions that were actually manufactured and tested. However, referring to the exact (and not to the approximate) steel compositions in Table 1, and to the presentation of the

obtained results in Fig. 1, it is clear that the maximum Mn content that has been actually tested in Nakaoka is not 0.30%, but 0.28%.

Accordingly, (1) the claimed lower limit of the Mn of claim 1 is not specifically disclosed by Nakaoka, and (2) the value of the anisotropy coefficient r of a steel having more than 0.30% Mn would be considered to be below 1.1 due to the very steep slope of the curve showing the relationship between r and Mn content in Fig. 1 of Nakaoka.

In addition, it is submitted that one of ordinary skill in the art would not arrive at the claimed range of Mn because Nakaoka teaches away from the claimed invention. That is, Nakaoka teaches that if the amount of Mn is increased above 0.25%, then the Lankford value decreases below the target 1.4 value. Thus, Nakaoka teaches away from using 0.3 % or increasing the amount of Mn because an important feature/object of Nakaoka is to improve formability where one aspect is increasing the Lankford value (r) of the steel sheet to a value of at least 1.4 to improve the deep-drawability of the steel sheet. *See* col. 3, line 59-col. 4, line 9. Accordingly, one of ordinary skill in the art would not modify the steel of Nakaoka by increasing the amount of Mn because such would affect the desired deep-drawability of the steel sheet. In this regard, the mere fact that one could increase the amount of Mn if lower Lankford values were desired is not the appropriate question, but why would one of ordinary skill in the art desire to obtain a lower Lankford value when Nakaoka teaches against it.

In view of the above, it is submitted that Nakaoka fails to teach or suggest the claimed range of Mn.

Furthermore, it is submitted that Nakaoka in combination with Chatfield does not result in the claimed invention.

Accordingly, it is submitted that a *prima facie* case of obviousness has not been established.

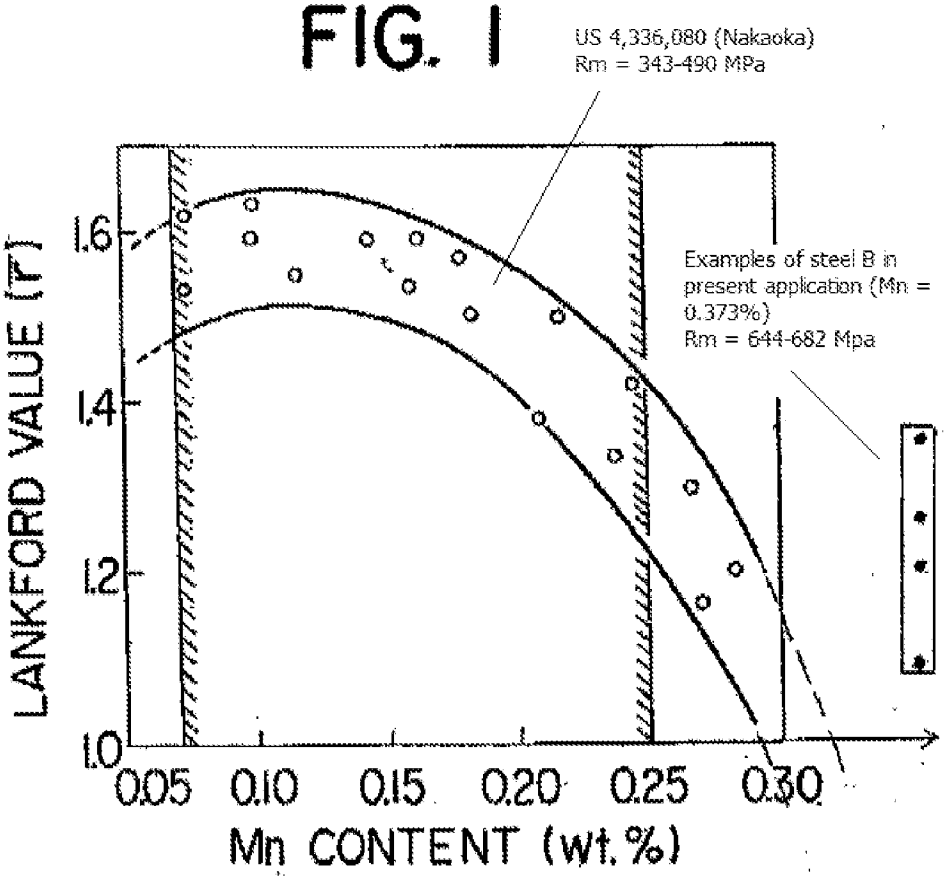
Moreover, it is submitted that the present invention provides unexpectedly superior results compared to Nakaoka.

Faced with the problem of obtaining a high r value and tensile strength at a value higher than 600 MPa, and in view of Nakaoka's teaching of a manufacturing process of steels having tensile strength limited to 35-50 kg/mm^2 (which is equivalent to 343-490 MPa) at column 11, lines 60-67 (*see also* Tables 2 and 3), one of ordinary skill in the art would have thought either to increase carbon, due its known effect for increasing tensile strength or to increase manganese, also because of its strengthening effect. *See* col. 6, lines 8-9.

However, at column 5, line 66 to column 6, line 5, Nakaoka teaches that such carbon increase lowers deep drawability and anisotropy. Thus, one of ordinary skill in the art would not have increased the carbon content above 0.060%. Regarding manganese, one of ordinary skill in the art would not have increased Mn above 0.25%, because Mn drastically decreases the r value (*see* Fig. 1), and Nakaoka states: "with a Mn content of over 0.25%.., the yield strength of the sheet increases beyond the target upper limit of 30 kg/mm^2, with a decreased value of elongation, and there is only insufficient generation of the recrystallized texture with an appropriate grain size acting favourably on deep-drawability."

For comparison, the results presented in the present application for steel B (Mn = 0.373%) have been overlayed on Fig. 1 of Nakaoka below. It can be seen that: (1) the results obtained by the present invention for r value are notably higher than one could expect with a Mn content of 0.373% and (2) these results are not only higher in r value, but also notably higher in tensile strength value (674-682 MPa) for present invention as compared to the range of 343-490 MP for Nakaoka).

FIG. 1



Accordingly, it is submitted that the above results would have been unexpected from Nakaoka to one of ordinary skill in the art. That is, starting from Nakaoka, one of ordinary skill in the art would not have increase Mn for tee reasons discussed above, and thus, would not have arrived at the claimed range of 0.300-0.500%. As a result, the present invention provides the unexpected increase in r and Rm values.

For at least the foregoing reasons, it is submitted that Nakaoka and Chatfield fail to render the present invention according to claim 1 obvious. Thus, it is submitted that claim 1 is patentable over the cited art.

In addition, claims 3-12 depend from claim 1, and thus it is submitted that these claims are patentable for at least the same reasons as claim 1.

II. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

/Keiko K. Takagi/
Keiko K. Takagi
Registration No. 47,121

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: June 1, 2011